

Research Instruments



At right is the Geneti-SCANNER™ Automatic Metaphase Finder, the newest product of Perceptive Scientific Instruments, Inc. (PSI), League City, Texas. Combining computer, digital imaging, recognition, robotics and biology technologies, the Geneti-SCANNER rapidly scans a batch of 60 slides and locates, digitizes, measures and classifies specific objects and events in research and diagnostic applications, for example, providing information for bone marrow diagnosis. The Geneti-SCANNER was introduced in Japan as a tool for chromosome research and is now being marketed in the U.S.

PSI is a technology transfer company, one whose primary product line is based on NASA image processing technology. The company was founded by Dr. Kenneth Castleman, who had worked on image processing at Jet Propulsion Laboratory (JPL) for 15 years, and Don Winkler, who had served 15 years with the Cell Image Laboratory of Johnson Space Center. Many other PSI employees are former NASA image processing specialists.

The company's initial development was an extension of work in computerized chromosome analysis Castleman and others had started at JPL. The product is the Genetiscan line of digital karyotyping instruments, now widely used by hospitals, universities and imaging businesses in the U.S., Japan, the Middle East, Europe and, most recently, the Commonwealth of Independent States.

Karyotyping is a process employed in analysis and classification of chromosomes, the bodies within a cell that carry the genes which determine heredity. Formerly, karyotyping was a laborious, time-consuming task



that involved photographing the chromosomes through a microscope, then manually cutting and pasting the images to put together a classification.

The Genetiscan Workstation™ and the Genetiscan Master Station™ (above) eliminate the need for photography and the tedious manual assembly of karyotypes. The systems employ a video camera mounted on a microscope to capture the chromosome images, which are converted to digital form for processing. This makes it possible to improve the quality of the images, for example, to enhance the contrast of the chromosomes, correct shading in the microscope, or perform several other types of image enhancement operations. Karyotyping, once a job requiring hours, can be accomplished in less than 10 minutes, thus increasing productivity and lowering costs in the research laboratory.

PSI also produces a line of quantitative digital imaging systems for industrial, scientific and clinical applications. ●

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**NASA IMAGE PROCESSING TECHNOLOGY SPAWNED
A LINE OF DIGITAL IMAGING SYSTEMS FOR MEDICAL
AND INDUSTRIAL USE**